

### **REMARKS**

This is in response to the Official Action currently outstanding with regard to the above-identified application, which Official Action the Examiner has designated as being "FINAL".

Claims 1-23 were pending at the time of the issuance of the currently outstanding Official Action. Applicants herein are proposing that Claims 1, 2, 5, 6, 16 and 19 be amended as indicated above so as to place all of the claims of this application in condition for allowance, or at least in better form for Appeal as required by 37 CFR 1.116. Applicants do not propose the addition, cancellation or withdrawal of any claims by the foregoing Amendment. Accordingly, in the event that the Examiner grants entry to the foregoing Amendment, Claims 1-23 as hereinabove presented will constitute the claims under active prosecution in this application.

The claims as they will stand in the event that the Examiner grants entry to the foregoing Amendment are reproduced above with appropriate status identifiers and showing the changes made as required by the Rules.

More particularly, in the currently outstanding FINAL Official Action, the Examiner has:

1. Failed to re-acknowledge Applicants' claim for foreign priority under 35 USC §119 (a)-(d) or (f), and reconfirmed the receipt by the United States Patent and Trademark Office of the required copies of the priority documents – **Applicants note that their claim for foreign priority and submission of the required copies of the priority documents was acknowledged by the Examiner previously in this prosecution;**

2. Failed to reconfirm the acceptability of the drawings as filed on 5 April 2002 – **Applicants note that the Examiner accepted the drawings as filed on 5 April 2002 earlier in the prosecution of this application;**
3. Provided Applicants with a Form PTO-892 listing the various references cited by the Examiner in this prosecution;
4. Indicated that Claims 9-15, 17, 18 and 21-23 are allowed – **Applicants respectfully note that the allowance of Claims 17 and 18 is believed to be premature in view of the Examiner's objection to Claim 16 (the basis of which is removed by the presently proposed Amendment);**
5. Objected to Claims 2, 6 and 16 – specifically claims 2 and 6 are objected to as being dependent upon a rejected base claim, but it is indicated that those claims would be allowable if rewritten in independent form including all of the limitations of their respective base claims and any intervening claims – Claim 16 on the other hand is objected to on the grounds that the term "C/N" is not appropriately defined in the claim – **By the foregoing Amendment, Claims 2 and 6 would be rewritten in independent form including all of the limitations of their respective base claims and any intervening claims and the definition of the term "C/N" (i.e., "carrier-to-noise ratio" see specification page 42, last line) would be added to Claim 16. Accordingly, in the event that the foregoing Amendment is granted entry by the Examiner, Applicant respectfully submits that Claims 2, 6 and 16 will be in condition for allowance.**
6. Rejected claims 1 and 19 under 35 USC §103(a) as being unpatentable over the Moose, et al. (US Patent 6,459,745) reference, in view of the Junell et al. reference (US Patent No. 6,125,124);

7. Rejected claim 3 under 35 USC §103(a) as being unpatentable over the Moose et al and Junell et al references in view of the Tsuruoka, et al. reference (US Patent No. 6,549,589);
8. Rejected claim 4 under 35 USC §103(a) as being unpatentable over the Moose, et al and Junell et al references in view of the Nomura et al reference (US Patent No. 6,275,551);
9. Rejected claims 5 and 20 under 35 USC §103(a) as being unpatentable over the Moose et al and Junell et al references in view of the Tanaka reference (US Patent 6,498,822);
10. Rejected claim 7 under 35 USC §103(a) as being unpatentable over the Moose et al and Junell et al references in view of the Tanaka reference and the Tsuruoka, et al. reference (US Patent No. 6,549,589);
11. Rejected claim 8 under 35 USC §103(a) as being unpatentable over the Moose et al and Junell et al references in view of the Tanaka reference (US Patent 6,498,822) and the Nomura et al reference (US Patent No. 6,725,551).

No further comment regarding items 1-5 above is deemed to be required in these Remarks.

Further, in view of the following Remarks and the foregoing Amendment, Applicant believes that in the event that the Examiner grants entry to the foregoing Amendment, all of the claims of this application will be in condition for allowance.

Accordingly, with regard to items 6-11 above, it will be seen that Applicants are proposing that Claims 1, 6 and 19 be amended such that it is made clear that the first memory means is adapted to store N (N is an integer of 2 or more) types of reference signals, each corresponding **only** to an arbitrary portion in said start symbol. Applicants respectfully submit that in the event that the Examiner grants entry to this Amendment, it will be clear that the present claims fall outside of the Examiner's position that the Junell reference teaches the first memory herein claimed because the Junell memory stores samples taken at regular intervals of the entire received signal. In other words, the Junell reference is such that that its memory stores arbitrary portions of the start signal ***in addition to other arbitrary portions of the received signal***. Hence, the Examiner's logic was that while the Junell memory is taught as storing **more than** the presently claimed memory, **it nevertheless still stored the portions of the received signal claimed** thereby teaching the limitations of the claims of this application currently at issue.

Applicants respectfully submit that the foregoing Amendment removes the basis for the Examiner's argument. In other words, as amended, the presently claimed memory is adapted to store **only** arbitrary portions of the start signal. Hence, since by the Examiner's own admission the Junell memory is adapted to store **more than** the type of information to which the present memory is limited to storing, the Junell memory cannot be said to disclose the presently claimed memory with its limited storage capability.

Consequently, Applicants respectfully submit that the present Amendment, if granted entry, would clearly and distinctly differentiate the present invention from the cited art and/or any combination thereof. In particular, with the addition of the presently proposed amendment language, Applicants respectfully submit that their previous argument is sufficient to overcome the rejections currently outstanding against the claims of this application. The resulting argument is set forth below for convenience of reference and to ensure the presentation of a complete record.

The present invention solves the problem caused by the delay autocorrelation method adopted by conventional OFDM signal receivers in which the delayed version of the reception signal is used for frequency offset compensation. Accordingly, Applicants respectfully submit that neither the Moose et al reference, nor the Junell et al reference, nor any combination of them, teaches, discloses or suggests a “**first memory means (51) for storing  $N$  ( $N$  is an integer of 2 or more) types of reference signals, each corresponding ONLY to an arbitrary portion in said start symbol**” (Emphasis added).

In particular, the Moose et al reference indicates that “(t)he phase modulation values contained in the frequency/timing recovery symbol are fixed and known (i.e., stored?) by the receiver. Also, they are selected in such a way that they contain two or more identical fractional parts, for example, identical first and second halves of the frequency/timing recovery signal.” (see, Col. 1, lines 59-64). Applicants understand this to mean that the Moose et al system sequentially selects redundant portions of the input signal and cross correlates those identical portions to obtain a fine frequency offset.

Then, in the Moose et al system, sample values from the same frequency/timing recovery signal are selected using the timing of the first iteration and those samples are frequency shifted by the fine frequency offset obtained in the first iteration. Thereafter, the so adjusted sample values are cross correlated with stored known values such that a correlation peak occurs at the relative frequency shift index. (See Moose at Column 7, lines 5-43)

Therefore, Applicants respectfully submit that the Moose et al reference discloses a memory storing at least 2 types of reference signals from the so-called "preamble" portion instead of reference signals corresponding to arbitrary portions of the so-called "start" portion of a reception signal as herein claimed. Applicants respectfully submit that the Examiner apparently has missed the second portion of the Moose process in his analysis because he does not recognize the presence of a memory in the Moose reference.

Further, while the Junell reference appears to disclose a memory for storing N types of reference signals (i.e., a so-called "format"), the reference signals so stored as far as Applicants have been able to determine **are not limited to** "arbitrary portions of said start signal" as herein claimed. Rather, the so-called "format" of the Junell et al reference appears to include samples from the beginning, end and middle of the received signal.

Applicants respectfully submit that it also should be recognized that unlike the present invention, the reference signals in the Junell reference apparently are retained in memory for only one estimation round (i.e., the values in memory are replaced by the then current values during each estimation round). Further, Claim 1 of the Junell et al reference indicates that unlike the present invention, that reference is concerned with locating the beginning and the end of each pulse as a means of determining the appropriate frequency offset - a device and method totally different from the present invention.

Accordingly, Applicants respectfully submit that while both the Moose et al reference and the Junell et al reference contemplate the use of a memory that in some manner stores multiple types of reference signals, the memories of those references are not adapted to receive and store reference signals that correspond ***only*** to “an arbitrary portion in said start signal” as herein claimed. Hence, Applicants respectfully submit that there are clear differences between the present invention on the one hand and the Moose et al reference and Junell et al reference on the other hand. Further, Applicants respectfully submit these differences do not reside exclusively in the method of use of the device claimed in claim 1 of this application. In other words, a memory adapted to store two (2) or more types of reference signals each corresponding only to an arbitrary portion in a start symbol added ahead of a data symbol section is not the same as any of the memories disclosed in the cited references that themselves are adapted to store totally different values in the contexts of devices capable of performing different methods. Consequently, Applicants respectfully submit that neither of the cited references, whether taken alone or in combination with one another, are adequate to render the present claims unpatentable.

Accordingly, Applicants respectfully submit that the above-discussed deficiency in the combination of the references relied upon by the Examiner is sufficient to overcome the currently outstanding rejection.

This position is supported by the Manual of Patent Examining Procedure wherein the standards for the establishment of the *prima facie* case of obviousness that an Examiner is required to establish in support of all rejections under 35 USC 103(a) are set forth as follows:

To establish a *prima facie* case of obviousness under Section 103, Title 35 United States Code (35 USC §103), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, ***the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure.*** *In re Vaeck*, 947 F.2d 488, 20 USPQ2D 1438 (Fed. Cir. 1991). (See, Manual of Patent Examining Procedure §2142 (8th Edition), at page 2100-2121, *et seq.*) *Emphasis added*

Applicants respectfully submit that Examiner's argument fails to show all of the elements of the present invention as hereinabove claimed within the four corners of the art that he has relied upon to reject the current claims. Also, Applicants respectfully submit that the Examiner has totally failed to demonstrate that the combination of features upon which he relies will perform the same function as the combination of elements hereinabove claimed. Consequently, Applicants respectfully submit that the currently outstanding Official Action fails to establish the requisite *prima facie* case necessary to maintain the currently outstanding rejections under 35 USC 103(a) in view of the foregoing Amendment and Remarks.



Therefore, in view of the foregoing Amendment and Remarks, Applicants respectfully submit that the claims of this application as they will stand in the event that the Examiner grants entry to the foregoing Amendment are in condition for allowance, or at least in better form for Appeal as required by 37 CFR 1.116. A decision so holding in response to this communication is respectfully requested.

Finally, Applicants believe that additional fees are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. **04-1105**, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

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